AMENDMENTS TO THE CLAIMS

Sub R1

1. (Currently Amended) A method for applying multi-resolution boundary encoding to region based still image and video encoding, comprising:

dividing an original image into a plurality of regions, wherein a plurality of boundaries associated with the plurality of the regions is detected;

encoding each of the plurality of the boundaries at a plurality of boundary resolutions, ~~whereby each of the plurality of the boundaries contains different resolution coefficients~~;

decomposing each of the plurality of the regions in the original image into one or more subbands each having a first boundary resolution; ~~using the plurality of the boundaries with the highest resolution coefficients~~;

successively decomposing each of the plurality of the regions in a subband ~~with lower resolution coefficients~~ into one or more subbands, each having a second boundary resolution, wherein the second boundary resolution is lower than the first boundary resolution ~~using the plurality of the boundaries with lower resolution coefficients~~;

transmitting boundary and image information having a selected resolution ~~with the lowest resolution coefficients~~; and

successively transmitting boundary and image information ~~with higher resolution coefficients~~ having higher resolution than said selected resolution.

2. (Currently Amended) The method of claim 1, wherein the encoding ~~step~~ includes encoding each of the plurality of the boundaries by two periodic wavelet series such that each encoded boundary contains a plurality of coefficients, where each coefficient corresponds to a boundary resolution, ~~whereby each of the plurality of the boundaries contains different resolution coefficients in each of the two periodic wavelet series~~.

3. (Original) The method of claim 1, wherein the decomposing step includes decomposing each of the plurality of the regions in the original image into four subbands using a region based subband encoding scheme.

4. (Original) The method of claim 3, wherein the decomposing step includes decomposing each of the plurality of the regions in the original image into a subband using low pass horizontal and low pass vertical frequency filters.

5. (Original) The method of claim 3, wherein the decomposing step includes decomposing each of the plurality of the regions in the original image into a subband using high pass horizontal and low pass vertical frequency filters.

6. (Original) The method of claim 3, wherein the decomposing step includes decomposing each of the plurality of the regions in the original image into a subband using low pass horizontal and high pass vertical frequency filters.

7. (Original) The method of claim 3, wherein the decomposing step includes decomposing each of the plurality of the regions in the original image into a subband using high pass horizontal and high pass vertical frequency filters.

8. (Original) The method of claim 1, wherein the successively decomposing step includes successively decomposing for at least three levels of decomposition.

9. (Currently Amended) The method of claim 1, further comprising reconstructing image information at a selected higher resolution in a receiver by combining the image information in the one or more lowest resolution subbands having a lower resolution than the selected resolution.

10. (Currently Amended) The method of claim 9, further comprising successively reconstructing image information at a yet higher resolution than the resolution in the receiver by combining the image information in the one or more lower resolution subbands having a lower resolution than the yet higher resolution, until the original image is reconstructed.

11. (Currently Amended) An apparatus for applying multi-resolution boundary encoding to region based still image and video encoding, comprising:

means for dividing an original image into a plurality of regions, wherein a plurality of boundaries associated with the plurality of the regions is detected;

means for encoding each of the plurality of the boundaries at a plurality of boundary resolutions, whereby each of the plurality of the boundaries contains different resolution coefficients;

means for decomposing each of the plurality of the regions in the original image into one or more subbands each subband having a first boundary resolution using the plurality of the boundaries with the highest resolution coefficients;

means for successively decomposing each of the plurality of the regions in a subband with lower resolution coefficients into one or more subbands, each subband having a second boundary resolution, wherein the second boundary resolution is lower than the first boundary resolution using the plurality of the boundaries with lower resolution coefficients;

means for transmitting boundary and image information having a selected resolution with the lowest resolution coefficients; and

means for successively transmitting boundary and image information having higher resolution than said selected resolution with higher resolution coefficients.

3

12. (Currently Amended) The apparatus of claim 11, wherein the means for encoding ~~step~~ includes means for encoding each of the plurality of the boundaries by two periodic wavelet series <u>such that each encoded boundary contains a plurality of coefficients, where each coefficient corresponds to a boundary resolution</u>, ~~whereby each of the plurality of the boundaries contains different resolution coefficients in each of the two periodic wavelet series~~.

13. (Currently Amended) The apparatus of claim 11, wherein the means for decomposing ~~step~~ includes means for decomposing each of the plurality of the regions in the original image into four subbands using a region based subband encoding scheme.

14. (Currently Amended) A computer readable medium providing instructions for applying multi-resolution boundary encoding to region based still image and video encoding, the instructions comprising:

dividing an original image into a plurality of regions, wherein a plurality of boundaries associated with the plurality of the regions is detected;

encoding each of the plurality of the boundaries <u>at a plurality of boundary resolutions</u>, ~~whereby each of the plurality of the boundaries contains different resolution coefficients~~;

decomposing each of the plurality of the regions in the original image into one or more subbands <u>having a first boundary resolution</u> ~~using the plurality of the boundaries with the highest resolution coefficients~~;

successively decomposing each of the plurality of the regions in a subband ~~with lower resolution coefficients~~ into one or more subbands <u>having a second boundary resolution</u> ~~using the plurality of the boundaries with lower resolution coefficients~~;

transmitting boundary and image information ~~with the lowest resolution coefficients~~ <u>having a selected resolution</u>; and

successively transmitting boundary and image information <u>having higher resolution than the selected resolution</u> ~~with higher resolution coefficients~~.

15. (Currently Amended) The computer readable medium of claim 14, wherein the instructions for encoding ~~step~~ includes encoding each of the plurality of the boundaries by two periodic wavelet series <u>such that each encoded boundary contains a plurality of coefficients, where each coefficient corresponds to a boundary resolution</u>, ~~whereby each of the plurality of the boundaries contains different resolution coefficients in each of the two periodic wavelet series~~.

16. (Currently Amended) The computer readable medium of claim 14, wherein the instructions for decomposing ~~step~~ includes decomposing each of the plurality of the regions in the original image into four subbands using a region based subband encoding scheme.

4

17. (Currently Amended) The computer readable medium of claim 16, wherein the instructions for the decomposing step includes decomposing each of the plurality of the regions in the original image into a subband using low pass horizontal and low pass vertical frequency filters.

18. (Currently Amended) The computer readable medium of claim 16, wherein the instructions for the decomposing step includes decomposing each of the plurality of the regions in the original image into a subband using high pass horizontal and low pass vertical frequency filters.

19. (Currently Amended) The computer readable medium of claim 16, wherein the instructions for the decomposing step includes decomposing each of the plurality of the regions in the original image into a subband using low pass horizontal and high pass vertical frequency filters.

20. (Currently Amended) The computer readable medium of claim 16, wherein the instructions for the decomposing step includes decomposing each of the plurality of the regions in the original image into a subband using high pass horizontal and high pass vertical frequency filters.